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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/672,394	09/26/2003	Kun-Pi Cheng	TS01-206	9169

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IP DEPARTMENT  
ONE LIBERTY PLACE  
PHILADELPHIA, PA 19103-7396

EXAMINER

GANDHI, JAYPRAKASH N

ART UNIT	PAPER NUMBER
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2125

DATE MAILED: 04/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/672,394

**Applicant(s)**

CHENG ET AL.

**Examiner**

Jayprakash N. Gandhi

**Art Unit**

2125

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 26 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 September 2003 is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>12/22/03</u> . | 6) <input type="checkbox"/> Other: _____  |

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## DETAILED ACTION

### *Drawings*

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the “overlay control table (claims 1, 6, 11 and 16)” must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-20 have been rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The description of figures 1 and 2, the simplified block diagram, uses general terms and common sense suggestions, but does not clearly describe an overlay control table.

***Claim Rejections - 35 USC § 102***

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-20 as best understood are rejected under 35 U.S.C. 102(e) as being anticipated by Park et al. (U. S. Patent 6,826,743).

Regarding claims 1-5, Park discloses an overlay control system (figures 1 and 2), including a plurality of process machines, a data collection tool, an overlay tool, a smart overlay control, and an equipment control (column 4, lines 1<sup>+</sup>).

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Referring to FIGS. 1 and 2, in step 101, the operator interface server 18 is input with various parameters necessary to initiate and operate a wafer exposure process. Associated input parameters are transmitted to a stepper 10 via an interfacing part 14 and a data bus 20. In step 102, the stepper 10 initiates an exposure process according to the input parameters. In step 103, an overlay measuring part 12 measures overlay data of wafers exposed in the stepper 10 to thereafter transmit the measured data to a data server 16. In step 104, the data server 16 receives the measured data from the overlay measuring part 12 and calculates an overlay error correction value according to a set of equations, hereinafter referred to as formula II:

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(8) wherein  $X(k)$  is a current overlay alignment value;  $X\_stepper(k)$  is an overlay error correction value;  $X\_ffwd(k)$  is a reference value for wafer alignment;  $X\_kla(k)$  is an overlay-measured value;  $x(k)$  is an estimated value in a variation of equipment through an empirical characterization of input changes; and  $X\_bias(k)$  is a weighted average value obtained from the latest ten lots.

(9) The overlay error correction value  $X\_stepper(k)$  in formula II is calculated by summing the weighted average value ( $w1:w2:w3 \dots w10.fwdarw.10:9:8 \dots :1$ ) of the latest ten lots (i.e., most recently) measured in a same history, the reference value  $X\_ffwd(k)$  for wafer alignment of a lot to be processed, and the variation of the stepper 10 through an empirical characterization of input changes in the stepper 10. In step 105, the overlay error correction value  $X\_stepper(k)$  thus calculated is transmitted to the operator interface server 18, wherein it is stored as overlay data for an exposure process of a subsequent wafer lot. At this time, the data server 16 preferably divides and stores overlay data according to a grouping criteria, such as a same load of the same stepper, a same pattern of the same lot, a same device, and the like. Such division of the overlay data by the data server 16 results in forming groups of a same type of overlay data, thereby maintaining consistency in the data.

Regarding claims 6-20, as stated above the system of Park, inherently possesses the method of overlay control.

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**Conclusion**

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Van De Pasch et al., Troprac et al., Yasuda et al., Yasuda and Ito et al. disclose related art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jayprakash N. Gandhi whose telephone number is 571-272-3740. The examiner can normally be reached on 6:30-5:00 (Mon. - Thu.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P. Picard can be reached on 571-272-3749. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jayprakash N Gandhi  
Primary Examiner  
Art Unit 2125

jng